

=> d his

(FILE 'HOME' ENTERED AT 11:07:59 ON 14 NOV 2002)

FILE 'CA' ENTERED AT 11:08:16 ON 14 NOV 2002

L1 56081 S ((GAS OR VAPOR) (3A) PHASE OR VAPOROUS OR GASEOUS OR  
VOLATILE) (8A) (MATERIAL OR PARTICLE OR PARTICULATE OR METAL? OR AEROSOL  
OR OXIDE OR RUTHENIUM OR RUO4 OR RUTHENA?)  
L2 6460 S L1 (8A) (DETECT? OR DETERMIN? OR ASSAY? OR ASSES? OR ANALY? OR MEASUR?  
OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR SENSE# OR SENSOR OR  
SENSING OR TEST? OR IDENTIF? OR QUANTITAT? OR QUANTIT? OR PROBE# OR  
PROBING)  
L3 228 S L2 AND (CONDUCTI? OR CONDUCTO?)  
L4 281 S L2 AND (ELECTRODE OR MICROELECTRODE)  
L5 1056 S L2 AND (DEPOSIT? OR DECOMPOS? OR FILM)-  
L6 59 S L4 AND L5  
L7 407 S L2 AND (ALARM? OR WARN? OR INDICATE OR INDICATION OR INDICATOR)  
L8 1369 S L2 AND (ROOM OR ELECTRONIC OR CIRCUIT OR SEMICONDUCT? (2A) (MANUFACT?  
OR PROCESS?) OR ATMOSPHER?)  
L9 108 S L7 AND L8  
L10 79 S L5 AND L7  
L11 12 S L4 AND L7  
L12 437 S L3, L6, L9-11  
L13 353 S L12 NOT PY>1999  
L14 17 S L12 NOT L13 AND PATENT/DT.  
L15 1 S L14 AND TOXIC  
L16 261 S L13 NOT (TURBULEN? OR PHTHAL? OR CARBON OR CORTEX OR COMBUST?)  
L17 92 S L13 NOT L16  
L18 4 S L17 AND (TEMPORAL OR MOLTON OR RHODIUM OXIDE)  
L19 250 S L16 NOT (CONIFER OR BAZRO3 OR SUPERCOND? OR PHOTOLUM? OR INVENTORY?)  
L20 191 S L19 NOT (FLUORINE (2A) CONTAIN? OR GAAS OR METHANE OR GAN OR ORGANIC)  
L21 59 S L19 NOT L20  
L22 2 S L21 AND SUBMICRON  
L23 180 S L20 NOT (ROAD OR MAGNETOH? OR DOSIMET? OR OXYGEN GAS OR PASSIVE)  
L24 167 S L23 NOT (WELDING OR FOOD OR SOLVENT OR NONISOTHERM? OR BAND OFFSET)  
L25 146 S L24 NOT (DIELECTRIC OR AMMONIA OR CHEMIION OR SINTER? OR CYCLING OR  
ORE)  
L26 153 S L15, L18, L22, L25

=> d l26 bib, ab 1-153

L26 ANSWER 22 OF 153 CA COPYRIGHT 2002 ACS

AN 129:72670 CA

TI Reduction Kinetics of Surface **Rhodium Oxide** by Hydrogen and Carbon Monoxide  
at Ambient Gas Pressures As Probed by Transient Surface-Enhanced Raman  
Spectroscopy

AU Williams, Christopher T.; Chen, Eddy K.-Y.; Takoudis, Christos G.; Weaver,  
Michael J.

CS School of Chemical Engineering, Purdue University, West Lafayette, IN,  
47907, USA.

SO Journal of Physical Chemistry B (1998), 102(24), 4785-4794

AB The transient redn. kinetics of surface **rhodium oxide** (Rh2O3) by **gaseous** H2  
and CO have been **probed** in situ by surface-enhanced Raman spectroscopy  
(SERS). The Rh surfaces are ultrathin **films** electrodeposited onto SERS-  
active gold, enabling surface vibrational spectroscopic information to be  
obtained with high **temporal** resoln. (~1 s) at elevated temps. (up to 500  
°C) and under ambient-pressure flow-reactor conditions. Surface Rh2O3 is  
formed by heating Rh in flowing O2 at 1 **atm** and fingerprinted by an intense  
530 cm-1 νRh-O feature. The redn. of such oxidized surfaces upon sudden

exposure to either H<sub>2</sub> or CO over a range of partial pressures (1-760 Torr) was monitored from the decay kinetics of the  $\nu$ Rh-O band intensity. Surface oxide is readily reduced by both reductants, although striking differences in the obsd. kinetic behavior **indicate** the occurrence of distinct reaction pathways. In the case of H<sub>2</sub>, at low partial pressures ( $\leq 7.6$  Torr) below 200 °C a temp.-dependent induction period is obsd. prior to rapid first-order oxide redn. Such "autocatalytic" behavior is indicative of a "nucleation/growth" mechanism, where H<sub>2</sub> dissociatively adsorbs to form reaction centers, followed by facile reaction between adsorbed (or lattice) oxygen and (possibly subsurface) hydrogen atoms. Immeasurably fast H<sub>2</sub>-induced oxide redn., however, occurs at higher temps. ( $\geq 200$  °C) and pressures ( $\geq 76$  Torr). In contrast, CO-induced oxide redn. was found to be substantially (at least 10-fold) slower than with H<sub>2</sub> at similar pressures and temps., yet no induction period was detected. At lower temps. ( $\leq 250$  °C), the oxide redn. kinetics by CO exhibit fast initial removal followed by a much more sluggish zero-order response. Such "autoinhibited" kinetic behavior, along with the lack of an appreciable CO pressure dependence, suggests that oxide removal is hindered by the extensive formation of adsorbed CO, which is obsd. to develop rapidly under these conditions from the characteristic Rh-CO and C-O stretching vibrations. This mechanism is further supported by the first-order kinetic response obsd. throughout oxide removal at temps. ( $\geq 300$  °C) where buildup of adsorbed CO is not detected. The transient kinetics for CO-induced oxide redn. are linked to the well-known poisoning effect that Rh surface oxidn. exerts on catalytic CO oxidn. by O<sub>2</sub>. Comparisons are also made between the present results and those recently obtained for methanol-induced oxide removal in order to elucidate which chemisorbed alc. fragment(s) constitute the

L26 ANSWER 42 OF 153 CA COPYRIGHT 2002 ACS

AN 123:328642 CA

TI Monitoring of metallic contamination by direct and indirect analytical methods application to cleaning processes in IC manufacturing

AU Tardif, F.; Joly, J. P.; Walz, D.

CS LETI, CEN/G, Grenoble, F38054, Fr.

SO Proceedings - Electrochemical Society (1995), 95-30 (Analytical Techniques for Semiconductor Materials and Process Characterization II), 299-315

AB The principle and exptl. obtained performances of anal. techniques liable to be used to monitor cleaning equipment are set out. Spectroscopic or direct anal. tools such as TXRF, VPD-TXRF and VPD-AAS/ICPMS are then compared in terms of cost of ownership with indirect tools such as SPV,  $\mu$ -PCD, ELYMAT, SCA, SCP and Kelvin probe. Identification of the detrimental effects induced by cleaning processes enable a monitoring strategy to be proposed which consists in using a combination of indirect measurement tools for monitoring and VPD-ICPMS or TXRF in case of troubleshooting. The acceptance thresholds and even the monitoring procedures have to be continuously adjusted with the information from elec. tests obtained on devices.

L26 ANSWER 141 OF 153 CA COPYRIGHT 2002 ACS

AN 64:9890 CA

OREF 64:1747e-f

TI Method of **measurement** of the rate of deposition of pure **metals** from the **gas phase**

AU Aizenshtein, A. G.; Ivanov, V. A.; Lisovskii, D. I.

SO Tsvetn. Metal. (1965), 38(9), 65-6

LA Russian

AB The method is based on the change in the elec. **cond.** of a metal rod on which pure metal is deposited from the vapor phase. An electronic app. is

described. It was tested in the vapor deposition of Si. The relative error was  $\leq 10\%$ .

=> log y

STN INTERNATIONAL LOGOFF AT 13:04:09 ON 14 NOV 2002

=> d his

(FILE 'HOME' ENTERED AT 15:15:50 ON 14 NOV 2002)

FILE 'CA' ENTERED AT 15:16:27 ON 14 NOV 2002

L1 23136 S DEPOSIT? (2A) (RATE OR SPEED)  
L2 280 S DEPOSIT? (2A) MONITOR  
L3 3152 S L1 (7A) (DETECT? OR DETERMIN? OR MEASUR? OR MONITOR? OR ASSAY? OR ANALY? OR ASSES? OR ESTIMAT? OR TEST? OR EVALUAT? OR INVESTIGAT? OR SENSE# OR SENSOR OR SENSING OR PROBE# OR PROBING OR EXAMIN? OR QUANTITAT? OR QUANTIF? OR PREDICT?)  
L4 171 S L2-3 AND ELECTRIC? (2A) (CONDUCT? OR RESIST? OR IMPED?)  
L5 150 S L4 NOT PY>1999  
L6 1 S L4 NOT L5 AND PATENT/DT AND SPUTTER?  
L7 35 S L5 AND (GLASS OR ELECTRODE OR MICROELECTRODE OR ALARM OR WARNING OR INDICATE OR INDICATION OR INDICATOR)  
L8 115 S L5 NOT L7  
L9 34 S L8 AND (CONTROL? OR RUTH? OR RUO4 OR METAL?)  
L10 70 S L6-7, L9

=> d l10 bib, ab 1-70

L10 ANSWER 1 OF 70 CA COPYRIGHT 2002 ACS  
AN 137:178363 CA  
TI Collimated **sputter deposition monitor** using sheet resistance  
IN Sandhu, Gurtej S.  
PA Micron Technology, Inc., USA  
SO U.S., 10 pp.  
PI US 6436246 B1 20020820 US 1997-788980 19970127  
US 6436247 B1 20020820  
PRAI US 1997-788980 A1 19970127  
AB A method and app. are disclosed for elec. monitoring processing variations of a material deposited using a collimated process. In 1 embodiment, the method and app. are directed to monitoring variations in step coverage of a conductive material deposited using a collimated **sputtering** process. A substrate having a plurality of trenches is used to mimic features desired to be monitored, such as contact holes. The resistance of metal deposited into the trenches is monitored to det. the effectiveness of the collimated **sputtering** process.

L10 ANSWER 22 OF 70 CA COPYRIGHT 2002 ACS  
AN 122:69000 CA  
TI Influence of deposition rates and thickness on the **electrical resistivity** and thermoelectric power of thin iron films  
AU Schepis, Randy S.; Matienzo, L. J.; Unertl, William; Schroder, Klaus  
CS Technology Products, IBM Corporation, Endicott, NY, 13760, USA  
SO Thin Solid Films (1994), 251(2), 99-102  
AB The **elec. resistance** and the thermopower of thin iron films were **measured** near room temp. as a function of **deposition rate** and thickness. The films were deposited on **glass** plates in a high vacuum system at pressures in the region of  $10^{-7}$  torr. Deviations of the resistivity and the Seebeck coeff. from bulk values increased with decreasing deposition rates.

main  
QC176.82.75  
L10 ANSWER 27 OF 70 CA COPYRIGHT 2002 ACS  
AN 120:276992 CA  
TI Silver thin films deposited by magnetron sputtering  
AU Marechal, N.; Quesnel, E.; Pauleau, Y.  
CS Nuclear Research Center of Grenoble, CEREM, DEM, SGSA, LTS, 85 X, Grenoble, 38041, Fr.  
SO Thin Solid Films (1994), 241(1-2), 34-8  
AB Silver thin films have been deposited on various substrates by d.c. and r.f. sputtering from a silver magnetron target and argon plasma. The **deposition rate** of metal films was investigated as a function of the sputtering power, argon pressure and r.f. bias voltage applied to substrates. The structure of sputter-deposited films was analyzed by the x-ray diffraction technique. The compn. of films was detd. by **Rutherford** backscattering spectroscopy. The morphol. of the cross-sections of films was examd. by SEM. Very low tensile residual stresses in these silver films were measured from the change in the radius of the curvature of silicon substrates induced by the films. The Knoop hardness and **elec. resistivity** of films detd. by four-point probe measurements were investigated as functions of the sputtering gas pressure.

main  
TA401.JB5  
L10 ANSWER 38 OF 70 CA COPYRIGHT 2002 ACS  
AN 112:208612 CA  
TI Electrical properties of thin metal zinc films  
AU El Shabasy, M.; El Hiti, M. A.; Ahmed, M. A.  
CS Fac. Sci., Minia Univ., Minia, Egypt  
SO Journal of Materials Science (1990), 25(1B), 585-8  
AB Thin metal Zn films 40 to 200 nm thick were deposited by thermal evapn. at room temp. onto **glass** substrates with a deposition rate of 0.2 to 0.7 nm/s. The **elec. resistivity** was measured as a function of film thickness, **deposition rate** and annealing temp. The **elec. resistivity** decreases as the film thickness, deposition rate and annealing temp. increase, while the temp. coeff. of resistivity increases with the increase in the film thickness. The calcd. values of the activation energy for the conduction electrons increase as the film thickness and deposition rate increase. The well known Fuchs-Sondheimer model is applied to the films. The theor. calcd. values for the **elec. resistivity** and the temp. coeff. of resistivity are in good agreement with the exptl. results.

L10 ANSWER 48 OF 70 CA COPYRIGHT 2002 ACS  
AN 104:94677 CA  
TI **Monitor** for lead **deposition** on exhaust converter catalyst  
IN Oka, Toshiaki  
PA Fuji Heavy Industries Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 3 pp.  
PI JP 60210752 A2 19851023 JP 1984-66993 19840403  
AB A Pb monitor consists of a reactive base made of an **elec. nonconductive** oxide, such as an oxide of Os, Re, or Ir, and an **electrode** on each end of the base. The base forms a Pb-contg. pyrochlore type oxide which is **elec. conductive**. The **elec. resistance** of the detector is the measure of Pb deposition on a catalyst.

main  
QC176.82.75  
L10 ANSWER 54 OF 70 CA COPYRIGHT 2002 ACS  
AN 95:89079 CA  
TI A study from **electrical conductivity** data of the defect concentration in as-grown indium thin films vacuum deposited at different deposition rates  
AU Das, V. Damodara; Talawai, Anand S.  
CS Dep. Phys., Indian Inst. Technol., Madras, 600 036, India  
SO Thin Solid Films (1981), 81(1), 21-5

AB Indium thin films  $625 \pm 25$  and  $500 \pm 25$  Å thick were prepd. by vacuum deposition at various controlled rates and at a pressure of  $2 \times 10^{-5}$  torr onto clean **glass** substrates held at room temp. The films were subjected to an in situ heating-cooling cycle immediately after formation, and their **elec. conductivities** were measured continuously during the heat treatment. By using Vand's theory, changes in **elec. cond.** during the heat treatment were correlated with changes in dd effect concn. in the films. From the resistance-temp. data, initial lattice distortion energy spectra of the films were **detd.** and were plotted for different **deposition rates**. From these plots, the defect d. decreases with increasing deposition rate.

L10 ANSWER 58 OF 70 CA COPYRIGHT 2002 ACS

AN 83:106357 CA

TI Film-thickness resistance monitor for dynamic **control** of vacuum-deposited films

AU Provo, J. L.

CS Neutron Devices Dep., Gen. Electr., St. Petersburg, Fla., USA

SO J. Vac. Sci. Technol. (1975), 12(4), 946-52

AB A simple monitor was developed which accurately and independently dets. the thickness of a film at any time during deposition. The principle of operation is the change in resistance of a vacuum-deposited film on a polished sapphire substrate maintained at a const. temp. The relationship between film deposition thickness and measured conductance was linear for **metal** films over a wide range of thickness at const. substrate temps. from room temp. to 600°. Film thickness measured by interferometric and differential weighing techniques is compared with that predicted from resistance measurements. The monitor was used for following changes in resistance during in situ, reactive, and air-exposed hydriding and for resistivity detns. of occluder film hydrides of Er, Sc, and Ti.

L10 ANSWER 65 OF 70 CA COPYRIGHT 2002 ACS

AN 65:25788 CA

OREF 65:4774e

TI **Electrical conductivity** of 0-2 monolayers of cesium on sapphire at 77°K

AU Levine, J. D.

CS Radio Corp. of Am. Labs., Princeton, NJ

SO J. Appl. Phys. (1966), 37(5), 2175-6

AB The 0-2 monolayer range was quant. investigated by **detg.** the cond. dependences on deposition thickness and **deposition rate**. Cs was the deposit **metal** and single-crystal sapphire was the insulating substrate. Prior to the measurements, >50 depositions were made to assure reproducibility. A series of measurements was then performed.

=> log y

STN INTERNATIONAL LOGOFF AT 15:36:01 ON 14 NOV 2002